

Supplementary material has been published as submitted. It has not been copyedited, typeset or checked for scientific content by Journal of Rehabilitation Medicine

Table S1.. Additional injury characteristics

Variable	Total (n=219)	Survived (n=163)	Deceased (n=56)	P-value
	No. patients (%)			
Max Abbreviated Injury Scale $\geq 3^a$				
Head	39 (18)	22 (14)	17 (30)	<0.01*
Face	2 (1)	2 (1)	n/a	0.60
Neck	11 (5)	8 (5)	3 (5)	1
Thorax	52 (24)	29 (18)	23 (42)	0.21
Abdomen	19 (9)	10 (6)	9 (16)	0.06
Spine	198 (90)	150 (92)	48 (86)	0.29
GCS during initial assessment				0.94
3	39 (18)	29 (18)	10 (18)	
4-8	5 (2)	4 (3)	1 (2)	
9-15	171 (78)	127 (78)	44 (79)	
Spine treatment				<0.01*
Conservative ^b	61 (28)	35 (22)	26 (46)	
Acute (< 12 hours)	65 (30)	49 (30)	16 (29)	
Subacute (> 12 hours; < 2 weeks)	77 (35)	64 (39)	13 (23)	
Elective (> 2 weeks)	16 (7)	15 (9)	1 (2)	
Revision surgery	20 (9)	15 (9)	5 (9)	0.80
Rehospitalizations	45 (21)	40 (25)	5 (9)	0.85

Abbreviations: **GCS** = Glasgow Coma Scale; **TSCI** = Traumatic spinal cord injury; **RTS** = Revised Trauma Score.

a: One patient can suffer multiple injuries, thus distributions have been calculated separately.

b: Includes external splinting therapy of the cervical spine.

*: statistically significant is defined as $p < 0.05$

Table SII. Patients who died after an end of life decision.

EOL	Age ^a	AISA	Injury location	GCS ^b	Polytrauma	CCI	H-LOS	ELD Setting	Predicted outcome	Critical morbidity	By	Motivation	Conscious
Withdrawn	40-45	A	C3-7	3	1	0	6	ICU	Persistent UWS to Infaust	Brain hypoxia	Clinician	Poor outcome	No
Withdrawn	30-35	Severe TBI ^c	C2	3	1	0	1	Ward	Infaust	Brain hypoxia	Clinician	Poor outcome	No
Withdrawn	20-25	A	C1-2	3	1	Unknown	1	ICU	Infaust	Brain hypoxia	Clinician	Poor outcome	No
Withdrawn	65-70	Severe TBI ^c	C1-2	3	1	1	3	ICU	Infaust	Brain hypoxia	Clinician	Poor outcome	No
Withdrawn	75-80	A	C2	3	0	Unknown	2	ICU	Infaust	High cervical injury	Clinician	Poor outcome	No
Withdrawn	60-65	A	C6	3	1	Unknown	5	ICU	Infaust	Severe TBI	Clinician	Poor outcome	No
Withdrawn	70-75	B or C	C5	3	0	0	3	ICU	Infaust	Severe TBI	Clinician	Poor outcome	No
Withdrawn	55-60	A	T4 ^d	3	1	0	6	ICU	Persistent UWS to Infaust	Severe TBI and severe polytrauma	Family	Poor outcome	No
Withdrawn	90-95	Severe TBI ^c	C3	3	0	1	2	ICU	Infaust	Severe TBI	Clinician	Poor outcome	No
Withdrawn	1-5	B	C1-7	3	1	0	5	ICU	Infaust	Severe TBI	Clinician	Poor outcome	No
Withdrawn	10-15	Severe TBI ^c	C2	3	1	0	2	ICU	Infaust	Severe TBI	Clinician	Poor outcome	No
Withdrawn	25-30	Severe TBI ^c	C2	3	0	0	5	ICU	Infaust	Severe TBI	Clinician	Poor outcome	No
Withdrawn	80-85	Severe TBI ^c	C1-2	3	1	0	2	P-ICU	Infaust	Severe TBI	Clinician	Poor outcome	No
Withdrawn	1-5	Severe polytrauma ^c	C1-2	3	1	0	2	ICU	Infaust	Severe TBI	Clinician	Poor outcome	No
Withdrawn	10-15	A	C2-5	3	1	0	2	ICU	Infaust	Severe TBI, Exsanguination	Clinician	Poor outcome	No
Withdrawn	75-80	C	T1	15	0	1	1	ICU	Paraplegia	Comorbidities (age)	Clinician	Poor outcome	No
Withdrawn	80-85	C or D	C6-7	15	1	Unknown	2	ICU	Severe disability to Infaust	Brain hypoxia	Family	Loss of independence, no nursing home	No
Withdrawn	75-80	B	C6	3	0	5	1	ICU	Severe disability to Infaust	Cardiac comorbidities	Clinician	Poor outcome	No
Withdrawn	75-80	C	C6	13	0	2	26	ICU	Respiratory impairment ^d	Comorbidities	Clinician	Poor outcome	Yes
Withdrawn	85-90	A or B	T4 ^d	12	1	Unknown	1	ICU	Respiratory impairment ^d	Comorbidities (age)	Family	Loss of independence	No
Withdrawn	90-95	C	C6-7	13	0	0	6	ICU	Tetraplegia	Severe dementia	Family	Loss of independence	No
Withdrawn	45-50	A	T9	3	1	0	1	ICU	Infaust	Exsanguination	Clinician	Poor outcome	No
Withdrawn	70-75	A	C2	3	1	0	2	ICU	Respiratory impairment ^e	High cervical injury	Family	Loss of independence	No
Withdrawn	55-60	A	C4	11	1	3	2	Ward	Respiratory impairment ^e	High cervical injury	Family	Loss of independence	No
Withdrawn	80-85	E	C6-7	15	0	7	5	Ward	Incomplete tetraplegia	Pneumonia, metastatic disease	Patient	Terminal phase	Yes
Withdrawn	55-60	A	C6	15	0	0	6	Ward	Respiratory impairment ^e	Respiratory failure	Patient	Loss of independence, home ventilation	Yes
Withdrawn	65-70	B	C6	12	0	1	120	Ward	Tetraplegia	Respiratory failure	Family	Loss of independence, no nursing home	No
Withdrawn	85-90	D	C5	3	0	1	53	ICU	Infaust	Respiratory failure	Patient	No return ICU	No
Withdrawn	90-95	Severe polytrauma ^c	C7	14	1	0	38	Home	Respiratory impairment ^e	Respiratory failure	Family	Loss of ventilatory function	No
Withdrawn	75-80	B	C7	15	0	6	20	ICU	Infaust	Respiratory failure, comorbidities	Family	Poor outcome	No
Withdrawn	75-80	A	C3	3	0	0	39	Ward	Infaust	Urosepsis, pre-existent tetraplegia	Patient	Pre-existing tetraplegia	Yes
Withdrawn	60-65	A	C6	3	1	4	42	ICU	Infaust	Urosepsis, pre-existent paraplegia	Clinician	Poor outcome	No
Withheld	40-45	Severe polytrauma ^c	T12	3	1	0	5	ICU	Persistent UWS	Severe TBI	Family	Sustained UWS	No
Withheld	75-80	Severe polytrauma ^c	T12-L1	15	1	1	25	ICU	Infaust	Age and comorbidities	Clinician	Poor outcome	Yes
Withheld	85-90	A	C3-6	14	0	1	10	ICU	Loss of upper extremities	Age and comorbidities	Patient	Loss of motor function	Yes
Withheld	80-85	B	C4	5	0	0	4	Ward	Tetraplegia	Complication GI-tract	Patient	Age, loss of motor function	Yes
Withheld	80-85	D	C3-4	15	0	2	2	Ward	Infaust	Respiratory failure	Clinician	Poor outcome	No

Withheld	65-70	B	C1	14	0	1	11	Ward	Respiratory impairment ^e	Respiratory failure	Family	Loss of ventilatory function	No
Withheld	60-65	B	C4-6	15	1	1	3	ICU	Tetraplegia	Respiratory failure	Patient	Loss of independence	Yes
Euthanasia	55-60	A	C3	15	0	1	25	Home	n/a	n/a	Patient	Loss of independence	Yes
Euthanasia	35-40	A	C4	15	0	0	15	Home	n/a	n/a	Patient	Loss of ventilatory function	Yes
Euthanasia	65-70	B	C5-6	15	0	0	42	Rehabilitation	n/a	n/a	Patient	Loss of ventilatory function	Yes

AIS = AISA impairment scale; GCS = Glasgow Coma Scale; CCI = Charlson' Comorbidity Index; (P)-ICU: (Pediatric) Intensive Care Unit; H-LOS = Hospital length of stay; UWS = Unresponsive wakefulness syndrome; TSCI=

Traumatic spinal cord injury; TBI = Traumatic brain injury.

a: Age has been stratified and gender has been omitted for anonymity.

b: GCS at ER admission.

c: In case of too severe concomitant injuries or due to TBI-related unconsciousness, neurological examination could not measure ASIA scale.

d: The patient showed clinical signs of high cervical TSCI yet thoracic MRI findings.

e: Defined as the need for sustained home ventilation.

Table SIII. Critical morbidities and motivations following withdrawal and withholding of treatment (table version).

	Critical concomitant morbidity for an ELD		
	Total (n=43)	Withdrawn from treatment ^a (n=36)	Withheld from treatment (n=7)
Respiratory failure	8 (19)	5 (14)	3 (43)
High cervical injury (C1-4)	3 (7)	3 (8)	
Severe polytrauma	1 (2)	1 (3)	
Severe pre-existent comorbidities	8 (19)	7 (19)	1 (14)
Severe TBI	11 (26)	10 (25)	1 (14)
Hypoxia	4 (9)	4 (14)	
Exsanguination	2 (5)	2 (6)	
Infectious	3 (7)	3 (8)	
Other	2 (5)	1 (3)	1 (14)
None	1 (2)		1 (14)

	Motivation for an ELD		
	Total (n=40)	Withdrawn from treatment ^b (n=33)	Withheld from treatment (n=7)
Poor predicted outcome	23 (59)	21 (64)	2 (29)
Loss of Independence	7 (18)	7 (21)	
Loss of motor function	1 (3)	0 (0)	1 (14)
Age/comorbidities	2 (5)	2 (6)	0 (0)
Loss of ventilatory function	3 (8)	2 (6)	1 (14)
Sustained unconscious/UWS	1 (3)	0 (0)	1 (14)
No ICU	1 (3)	1 (3)	

Abbreviations: **ELD**: End-of-life decision; **TBI**: Traumatic brain injury; **UWS**: unresponsive wakefulness syndrome; **ICU**: Intensive Care Unit.

a: Six patients sustained multiple decisive critical morbidities (i.e., patients respectively with severe TBI and severe polytrauma, severe TBI and exsanguination, pneumonia and metastatic disease, respiratory failure, and severe comorbidities, and two patients with critical urosepsis with pre-existent tetraplegia).

b: In two of the three patients where loss of independence was motioned potential referral to a nursing home was also decisive, and one of the three also mentioned loss of respiratory function.